EgFWD - Udacity

Embedded System Professional Track

On-Demand Traffic Light Control Project

Subject: Project Documentation.

By: Kyrillos Adel Sedhom

Table of Contents

1) System Description 3
2) System Design 4
2.1) Components 4
2.2) System Integration 4
3) Flowchart 5
4) System Constraints: 6

Table of Figures

Figure 1: Simulation on Proteus 4
Figure 2: Flowchart 5

1) System Description:

The system is a traffic light system in which cars are moving but when a pedestarian want to cross the road, he pushes a button so that it makes the cars stop, and then he crosse the road then back to normal mode and soon.

The normal mode consists of 3 LEDs red,yellow&green, each led stays for five seconds but the yellow led blinks 5 times while the time passes.

Also the pedestarian mode also consists of 3 LEDs to make pedestarians stop or pass.

2)System Design:

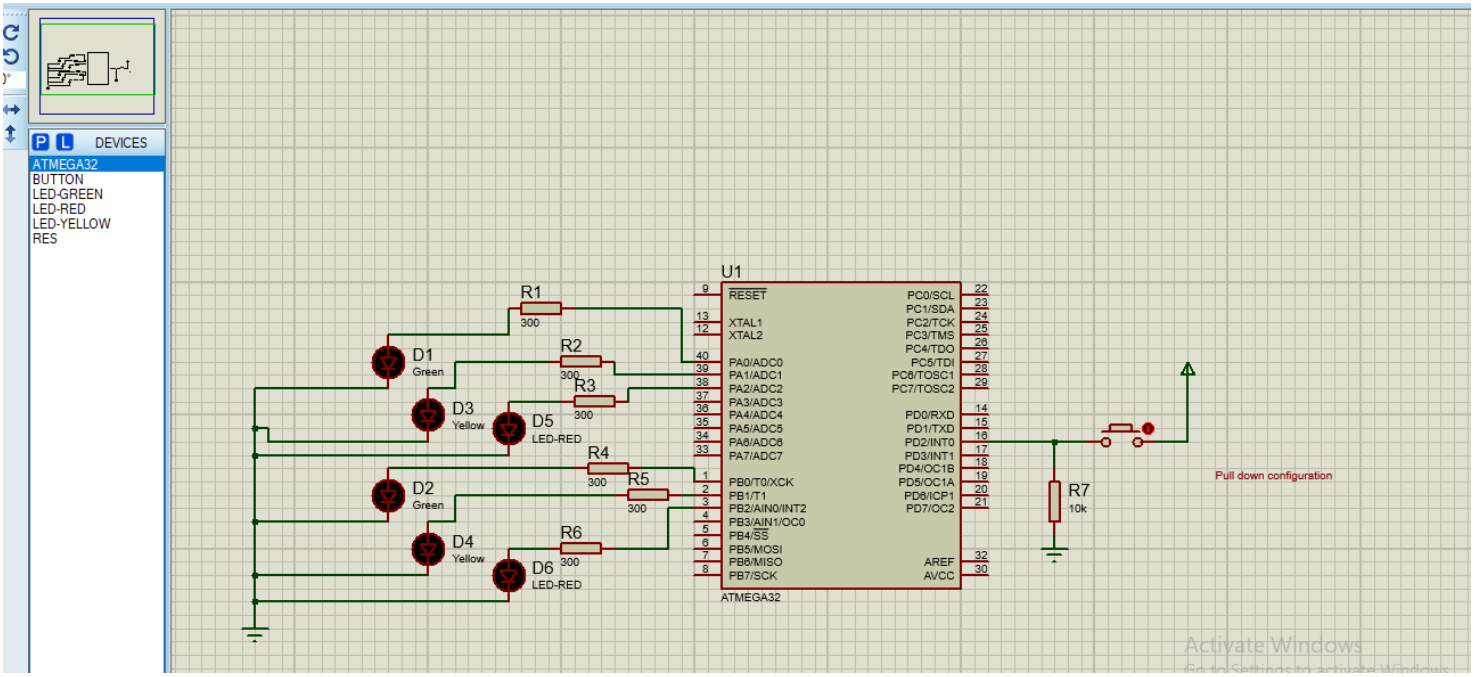

Figure 1: Simulation on Proteus

1.1) Components:

The System Requires:

- Atmega32
- 2 Green Leds
- 2 Yellow Leds
- 2 Red Leds
- 1 NO Push Button
- 6 300 ohm Resistors
- 1 10k ohm Resistor

1.2) System Integration

The system is connected as follows:

A. Green led to 300 ohm resistor then to pin A0
B. Yellow led to 300 ohm resistor then to pin A1
C. Red led to 300 ohm resistor then to pin A2
D. Green led to 300 ohm resistor then to pin B0
E. Yellow led to 300 ohm resistor then to pin B1
F. Red led to pin 300 ohm resistor then to B2
G. All leds are connected from the other side to the ground
H. Button to pin INT0 and from the other side to power source
I. 10k resistance connected between the button and pin INT0 and from the other side to the ground

All the LEDs are outputs and the button is the input to the system and acts as an interrupt to the system.

2) Flowchart:

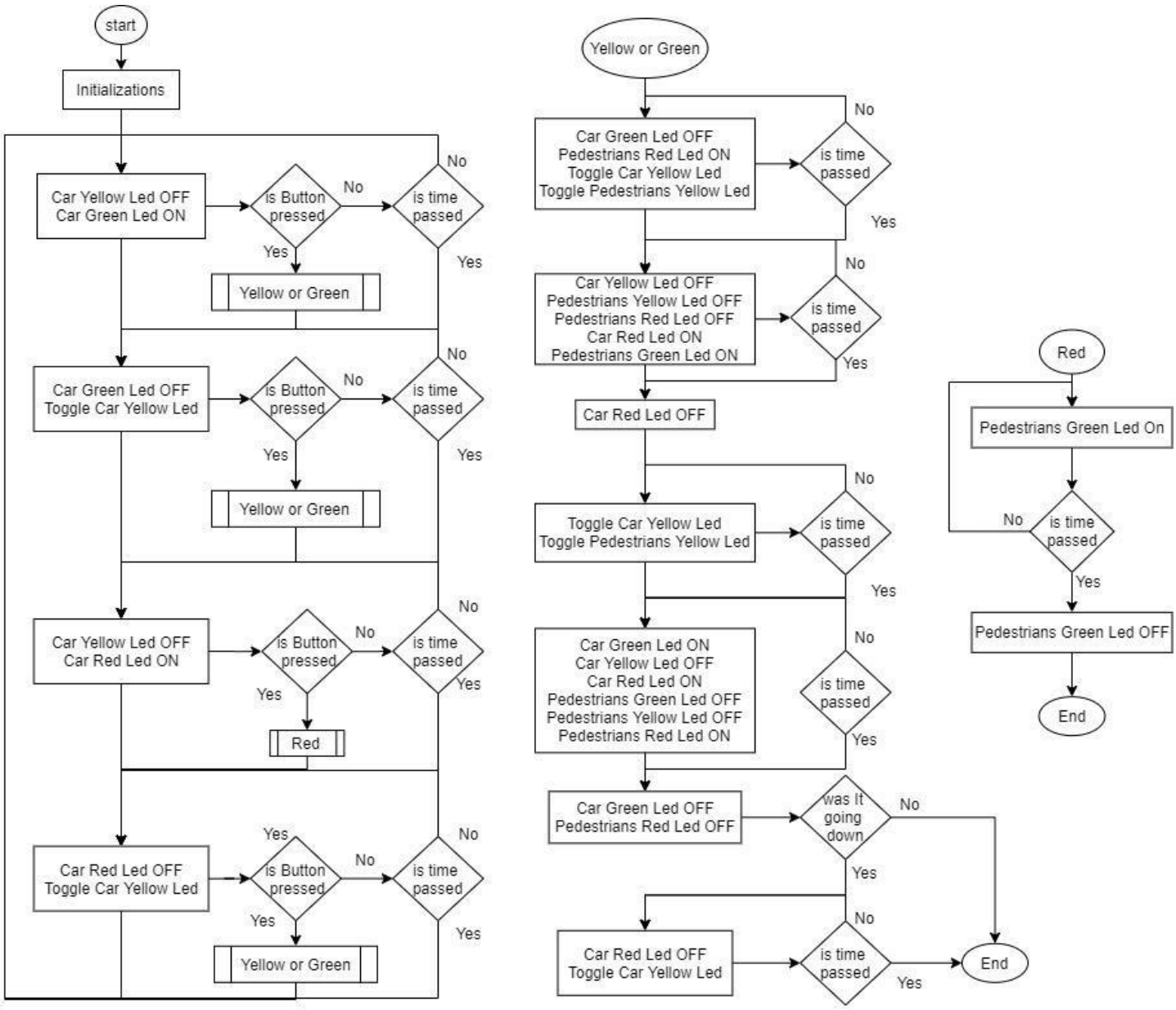

Figure 2: Flowchart

3) System Constraints:

- Pedestrian mode can’t be made again while it is on so it must be finished first to restart it.
- System isn’t affected by long press or double presses.